



Rohi fish length =14 inch and weight =1.200kg

LAT 21°49'39" N FRIDAY 05.18.2018
LONG 86°39'51" E LOCAL TIME 11:56:03

Gender-differentiated needs and preferences of farmers for Rohu fish in Bangladesh and India

Mamta Mehar, Mekkawy Wagdy, Cynthia McDougall and John Benzie

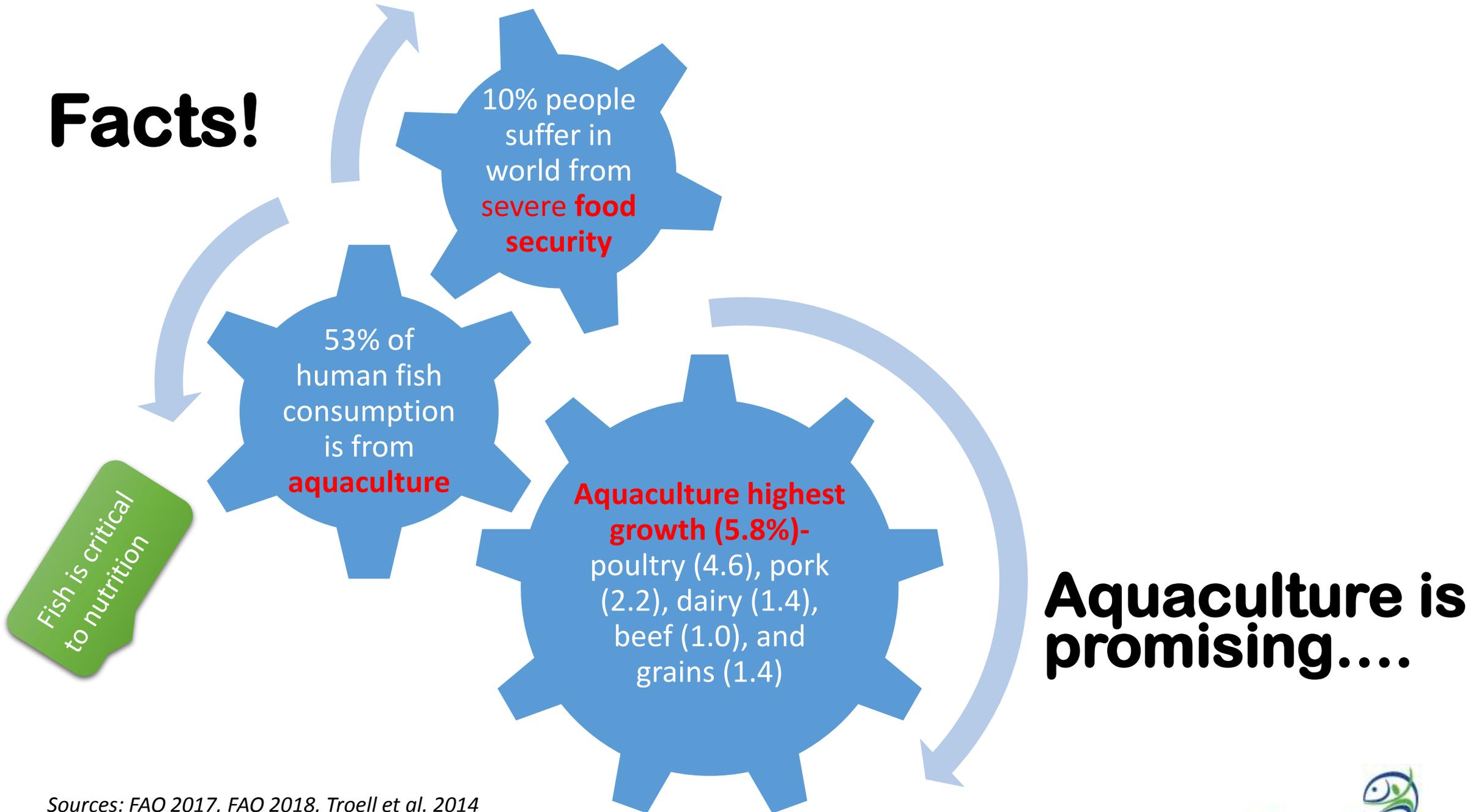
7th Global Conference on Gender in Aquaculture & Fisheries (GAF7)

Oct. 18, 2018, Bangkok



RESEARCH
PROGRAM ON
Fish

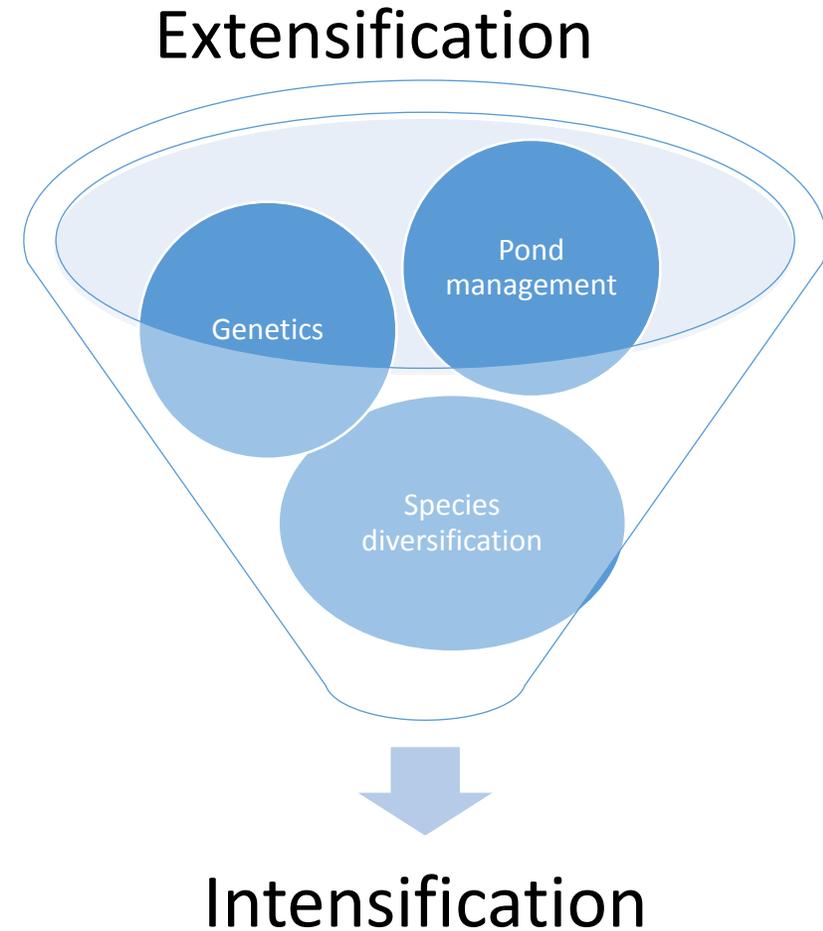
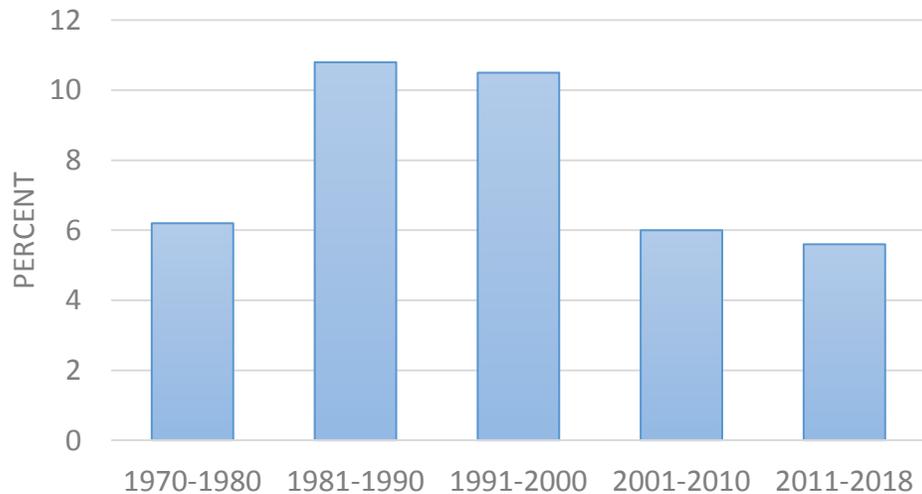
Facts!



Sources: FAO 2017, FAO 2018, Troell et al. 2014

Challenges?

Avg annual growth rate of aquaculture by volume



Genetics

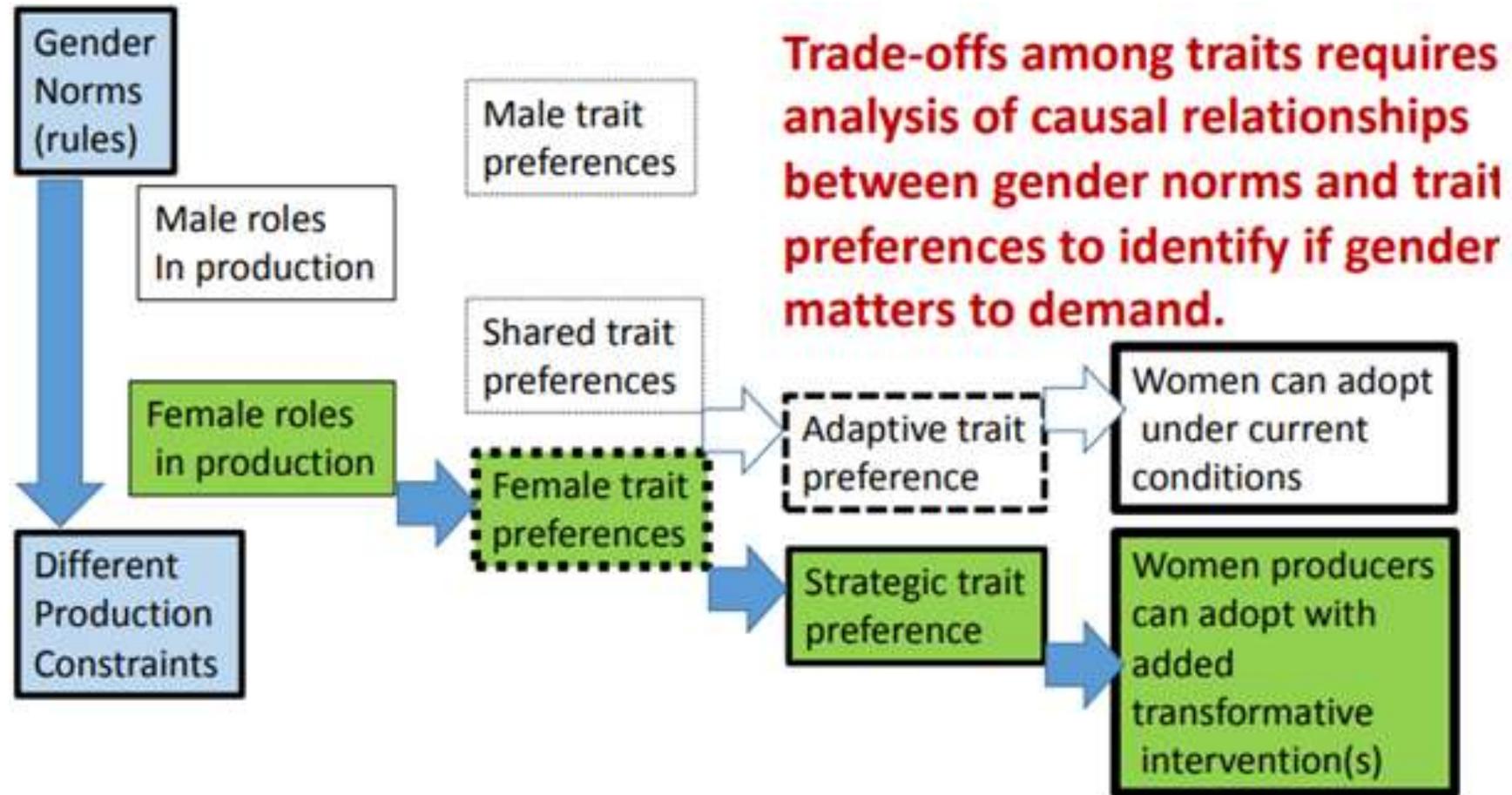
- Genetics improved strain success (*Benzie et al. 2012 and Gjedrem & Rye 2016*)
- World aquaculture production could be doubled within 13 years if selective breeding is applied to all aquatic species (*Gjedrem et al. 2012*)
- Less than 10 % of global aquaculture production is based on genetically improved fish from modern breeding programs (*Olesen et al. 2015*)

The wide adoption of improved strains depends on the benefits they provide to women and men involved in production, consumption, and marketing

Breeder's question

- Who they are breeding for?
- Feasible trait(s) with adoption and economic impact at large scale
- Potential trait(s) for all segment of society and across countries
 - Gender-responsive traits

Why Gender?



Source: Presentation by Jacqueline Ashby on 21 September 2017 as part of the webinar 'Design elements for gender-responsive breeding'. Available at <http://gender.cgiar.org/webinar-design-elements-gender-responsive-breeding/>

Picture of Rohu, Tilapia & Silvercarp



Fish trait examples:

- Length (in cm)
- Weight (in gram)
- Color
- Taste
- Body shape
- Firmness
- Bone texture

Study: India and Bangladesh

- What are the needs and preferences of farmers (both as producer or consumer)?
- Do the needs or preferences for traits differ between men and women? If yes, in what way and to what extent do they differ?
 - And what are the implications of these differences for Genetic Improvement fish breeding programs?

A review of fish trait preferences by users: implications for fish breeding

- Non-systematic search: No (fish) breeding program has social and gender inclusion
- Systematic Search (*Region: Europe, Africa & Asia*)



Reference: Mehar et al (in process) A review of fish trait preferences by users: implications for fish breeding

Interdisciplinary team

Economics



Rural Sociology & mixed Methods



Gender



Genetics



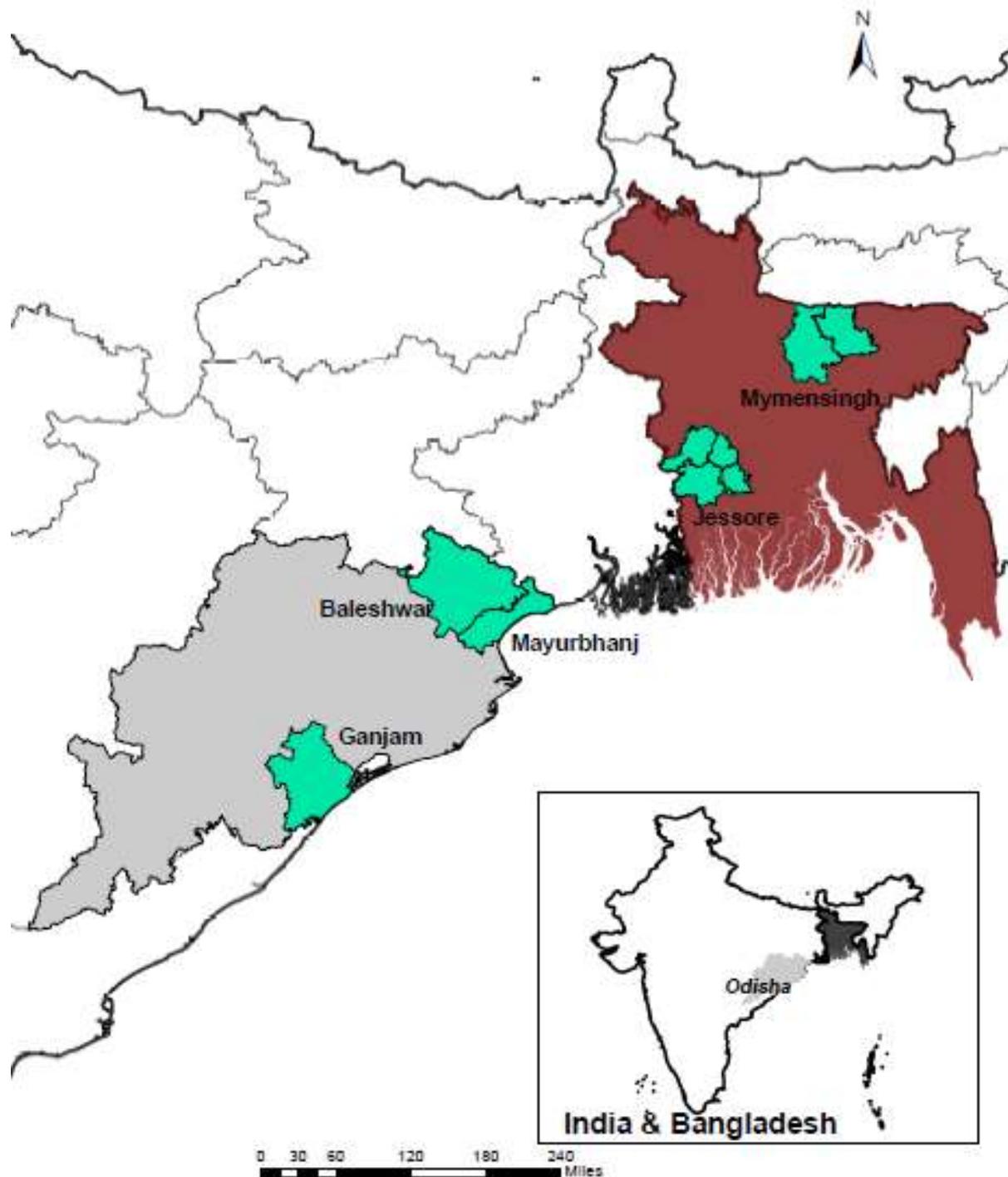
Sustainable Aquaculture



Rural Sociology

From left to right: Ann Tickmayer , Cynthia McDougall, John Benzie, Mamta Mehar, Wagdy Mekkaway, Jharendu Pant, Conner Bailey

Studied region



Methods



For your own farm production and home consumption, which of these 2 characteristics combinations do you prefer for Rohu (all else being equal)

| | |
|--|--|
| Weight (in kg per fish) গরন (মেং প্রতি কেজি প্রতি) 0.22 | Weight (in kg per fish) গরন (মেং প্রতি কেজি প্রতি) 1.45 |
| Price (in taka per kg) মূল্য (প্রতি কেজি টাকা) 156 | Price (in taka per kg) মূল্য (প্রতি কেজি টাকা) 100 |

this one OR this one

this combination is impossible this combination is impossible

they are equal skip this question for now

12

Results- outline

- Community level
 - Focus group discussions
- Household level: Male & Female Separately
 - Experimental choices (ranking using 1000minds app)
 - Open-ended questions
 - What they like/dislike
 - What they like to improve
- Household level: Producer
 - Open-ended
 - Preference with measures size (weight & length) and growth

Focus group discussion

Male and female preferences and needs vary:

- main income source of Household
 - Fish or rice farming

*“Male gives more times to paddy,
so female take care of ponds”
- Respondent*

- Based on their involvement in fish activity at farm and household
 - Eg. Feed management, monitoring especially water quality, cooking quality, consuming, buying fry/fingerling, no female involve harvest & selling to market

*“Despite female group [SHG
working for fish], male go to
hatching to buy fry/fingerling,
harvest & sell fish”
- Respondent*

FGD...contd

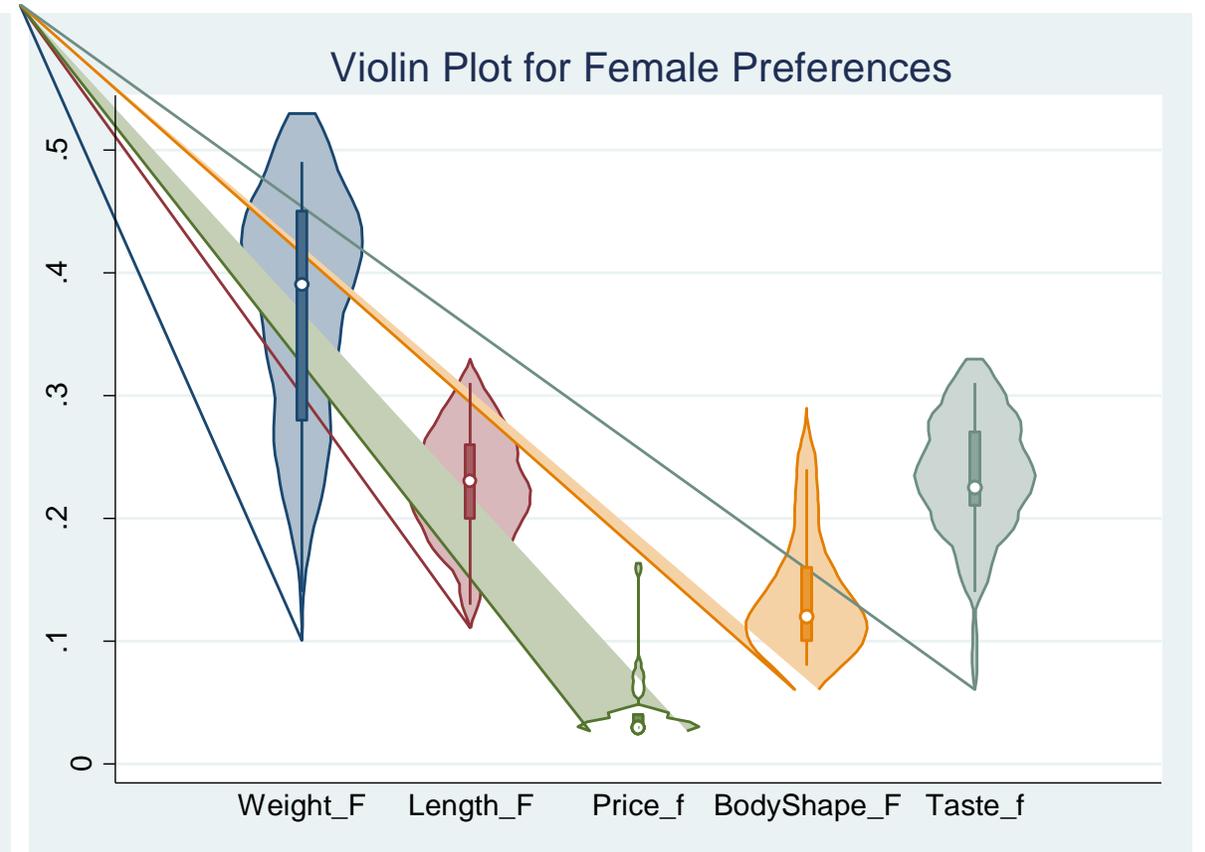
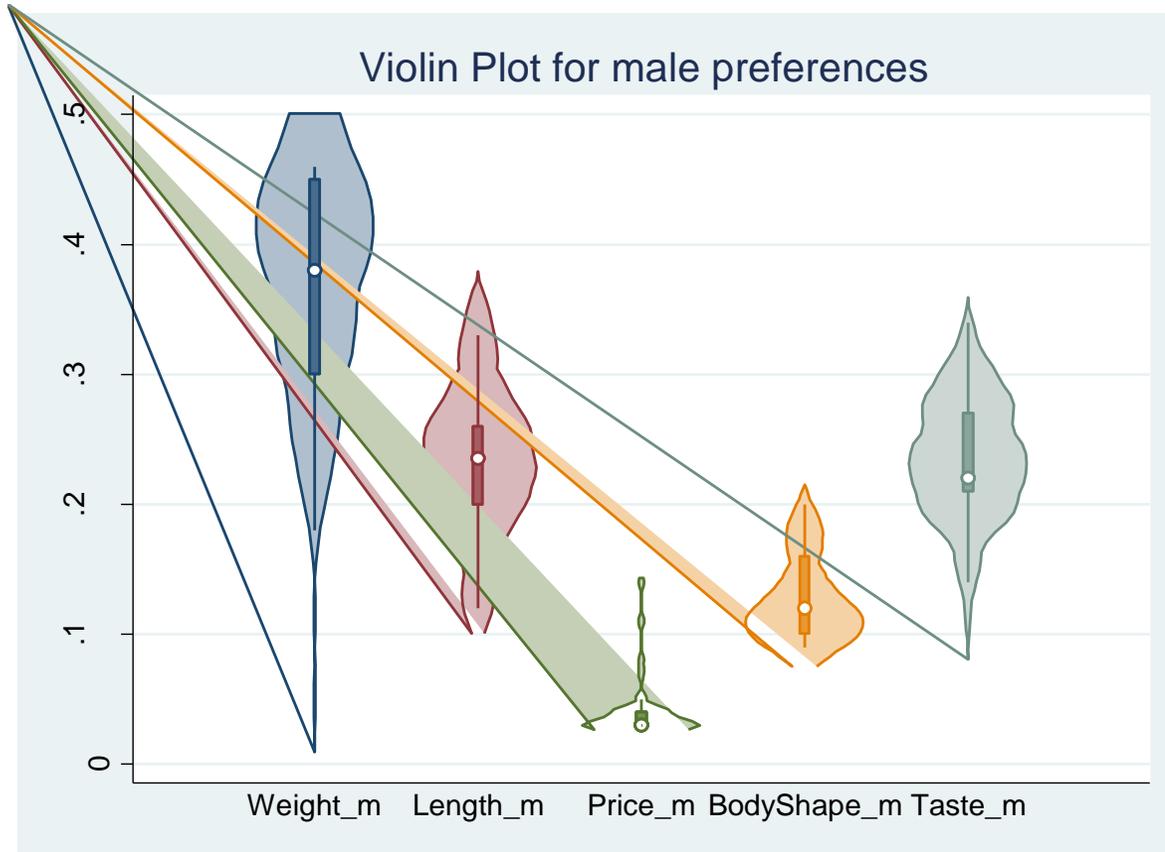
- Based on consumption preference and family food security
 - Rohu main fish, festival & ceremonies, nutrition and total food intake of household, male eat head, children cannot eat small Rohu as it has more bones
- Based on decision-influence
 - Trait preferences for what to cultivate and what to buy

“.....while serving fish to head of family (male person), she serves as per choice of the male member.” - Respondent

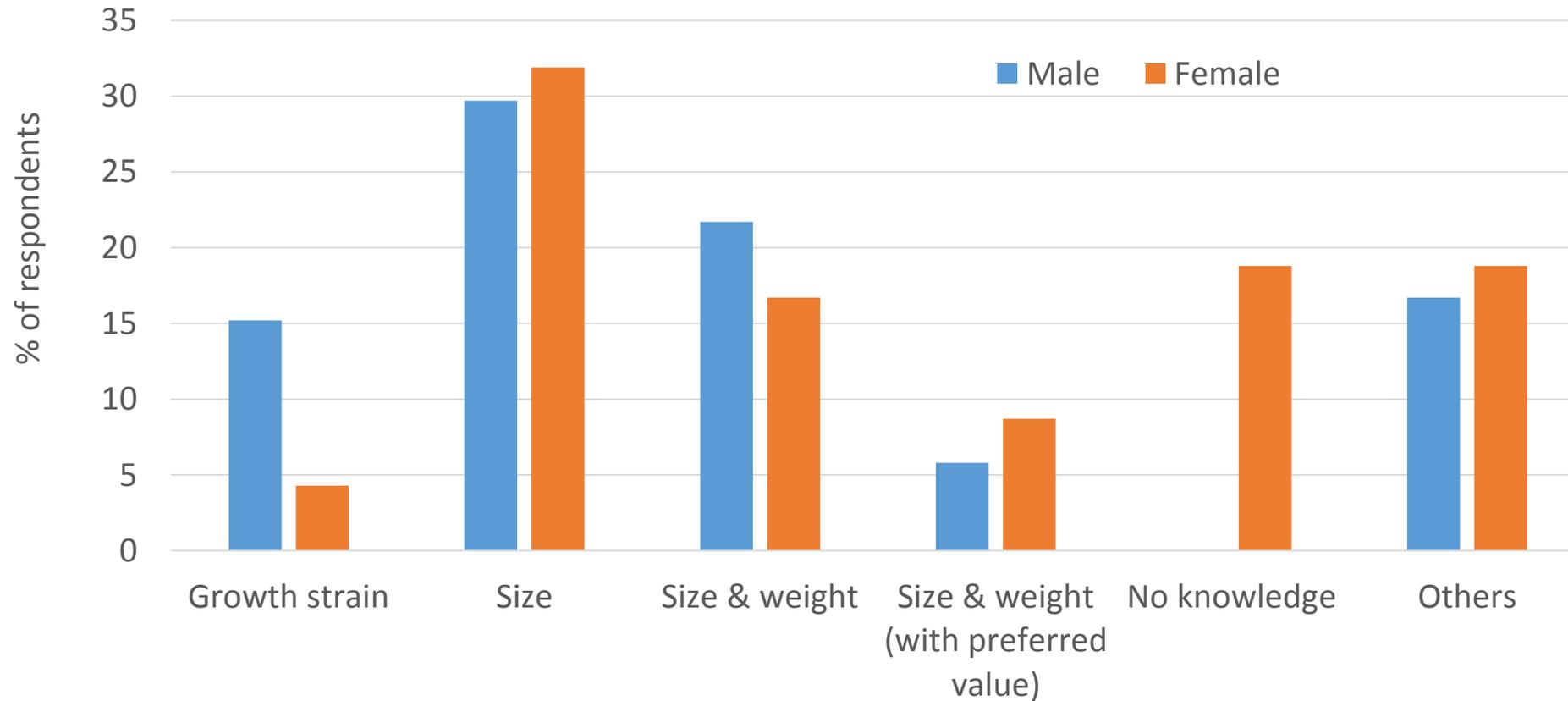
“The mother-in-laws and husbands of individual farmers usually decide which fish into be cooked in household”
- Respondent

“women tell to purchase the particular variety of fish for cooking” -
-Respondent

Experimental choices: 1000 minds



What to improve...*contd...*



Preferences for size & growth

- Improve Size (in length and Weight)
- Growth strain:
 - Short culture period with big size (more than 1 kg)
 - Short culture period with same size (500-600 gram)

| Duration (month)\ weight | 500-800 grams | above 800 grams |
|--------------------------|---------------|-----------------|
| 4-6 months | 39.5 | 46.5 |
| 6-10 months | 40.0 | 56.0 |

Note: Sum is not adding to 100, few points are with enumerators for data cleaning



Trait preferences across farmers

(in progress.....)

| Traits | Farming type | Inputs | | Management | |
|--------|--------------|--------------------------|------------|-----------------|--------------------------|
| | | Feed (type, qty, timing) | Fertilizer | Pond management | Water quality management |
| | | | | | |
| | | | | | |
| | | | | | |

Summary

- Results from systematic literature review:
 - No (fish) breeding program has social and gender inclusion
 - Only 26 studies have explored trait preferences across users
 - 6 studies have highlighted male & female preferences differ significantly
- Results from field information:
 - Men & women needs & priorities are different (quali-FGD)
 - No significant difference between male & female preferences (quant.)
 - Common & divergent preferences of male & female (quant in quali manner)

Eliciting, defining, communicating traits to breeding program needs:

- No-gold standard rule to find (feasible) trait(s)
- Use, sequencing & layering of different methods
 - Mixed methods
- Make sense of information via analyzing 'inter-sectional points' vis-à-vis culture concerns (eg. norms, behaviour...)
- Focused interaction of different disciplines (Ragkot, 2018)



Terima
Kasih!!

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Photo Credit: my enumerator team, my-self

Gender & Breeding Postdoctoral Fellow Initiative

To enhance gender-responsive breeding

Increase inter-disciplinary gender related knowledge and skills
Generate empirically-based insights into common and unique aspects of breeding



Bela (IITA)

Product profiling and gender in cassava breeding:
An integrated approach



Seamus (WorldFish)

Gendered fish preferences of resource poor consumers and retailers



Pricilla (Bioversity)

Integrating gender knowledge and preference into banana breeding



Mamta (WorldFish)

Gender-differentiated end-user preferences for genetically improved fish



Lemlem (WorldFish)

Gender-sensitive aquaculture for gender equitable income, food and nutritional outcome



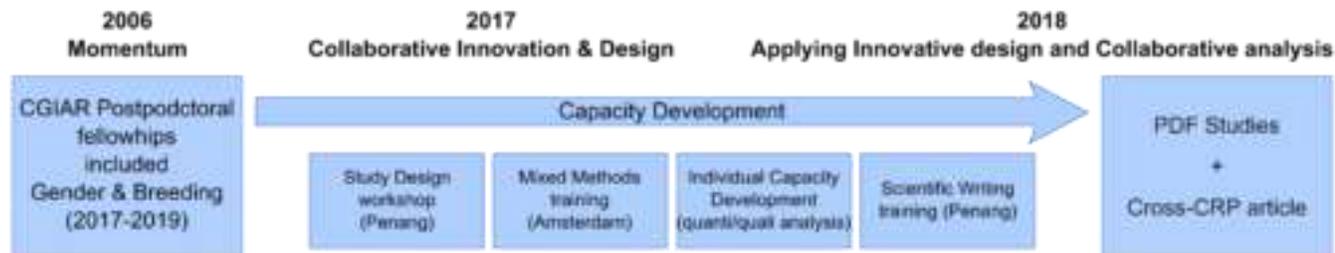
Birhanu (ILRI)

Gender dimensions of fodder technology adoption



Juliet (ILRI)

Gender-sensitive small ruminant breeding



Trade-off scenarios

| | Genetic | Farm Management | Gender | Performance |
|-------------------|----------------------------------|-----------------|------------------------------|--|
| <i>Indicators</i> | <i>Variety/ animal breed</i> | <i>Inputs</i> | <i>Male & female</i> | <i>Yield/ productivity/ income</i> |
| Scenario I | *** | * | * | * |
| Scenario II | * | *** | * | ** |
| Scenario III | *** | ** | *** | *** |

| trait | Level | Utility (%): Male responses | t-test value ^a | Utility (%): Female responses | t-test value ^a | t-test for paired sample (men and women) (b) |
|---------------------------|--|-----------------------------|---------------------------|-------------------------------|---------------------------|--|
| Weight (in kg per fish) | <ul style="list-style-type: none"> ▪ On average 22 gram ▪ On average 83 gram per fish ▪ More than 1.45 kg gram fish | 0.38 | 10.73*** | 0.39 | 11.57*** | -0.58 |
| Price (in taka per kg) | <ul style="list-style-type: none"> ▪ 100 Rs ▪ 156 Rs ▪ 210 Rs | 0.03 | -42.46# | 0.03 | -41.42# | 0.59 |
| length (in inch per fish) | <ul style="list-style-type: none"> ▪ Around 8 inch ▪ Around 11 inch ▪ Around 15 inch | 0.23 | 3.43*** | 0.21 | 3.18*** | 0.84 |
| Taste | <ul style="list-style-type: none"> ▪ -As it is ▪ -Original/Sweet/Good | 0.25 | 4.20# | 0.22 | 3.19** | 0 |
| Body shape | <ul style="list-style-type: none"> ▪ -Round ▪ -slender ▪ -flat | 0.11 | -12.8# | 0.12 | -7.87# | -0.88 |

N=38

*p<0.10, **p<0.05, ***p<0.01, #p<0.001

a: hypothesis- for the null hypothesis that each trait's part-worth utility is equal to the value that would be obtained if all traits were of equal importance (i.e. 100/5=20)

Some Facts about CGIAR



Source: <http://aims.fao.org/activity/blog/cgiar-capacity-building-other-efforts-improve-food-and-nutrition-security-the-inside>

<https://www.cgiar.org/research/research-portfolio/>